What is a Community?

- **An ecological community** consists of all the interacting populations in an ecosystem.
- Interactions among populations in a community limits their abundance, distribution, and density.
  - Populations are associated with resource availability.

Camouflage

- **Camouflage** also helps predators ambush their prey
  - Examples: the cheetah blending with tall grass and the frogfish resembling a rock.
**Bright Colors**

- Some animals have evolved bright *warning coloration* that attracts the attention of potential predators.
  - Advertises that they are distasteful or poisonous *before* the predator attacks
  - Examples: poison arrow frogs, coral snakes, and yellow jackets

**Protection via mimicry**

- **Mimicry**: a situation in which one species has evolved to resemble another organism.

<table>
<thead>
<tr>
<th>Honeybee</th>
<th>Hornet</th>
<th>Wasp</th>
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- Two or more distasteful species may each benefit from a *shared* warning coloration pattern.
  - Predators need only experience one distasteful species to learn to avoid all with that color pattern.
  - **Example**: bees, hornets, and yellow jackets share black-and-yellow stripes.
  - **Example**: monarch and viceroy butterflies share orange and black pattern.
Batesian Mimicry

- Some harmless organisms can gain a selective advantage by resembling poisonous species.
  - Example: harmless hoverfly resembles bee.
  - Example: harmless mountain king snake resembles the venomous coral snake.

Deter Predators

- Deter by startle coloration - spots that resemble eyes of a large predator.

Aggressive Mimicry

- Predator resembles a harmless animal, or part of the environment, to lure prey within striking distance.
  - Example: frogfish dangles wriggling lure that attracts a curious fish that is then eaten.
Aggressive Mimicry

- Snowberry flies avoid jumping spider predation by mimicking them both visually and behaviorally.

Chemicals (for predators and prey)

- Have evolved toxic chemicals for attack and defense.
- Spiders and snakes use venom to paralyze their prey and deter predators.
- Plants evolved chemicals to deter herbivores.
- Bombardier beetle sprays hot chemicals from its abdomen.

Coevolution

- The monarch butterfly uses the deterrent chemicals in milkweed, acquired by a feeding caterpillar, to make itself distasteful to its predators.
Symbiosis

- The close interaction among organisms of different species for an extended time.
- Three major relationships:
  - Commensalism
  - Parasitism
  - Mutualism

Commensalism

- Where one species benefits and the "other" is unaffected
- Example: barnacles hitching a ride on the skin of a whale.

Parasitism

- The parasite benefits but the host is harmed.
- The parasite lives in or on the host and benefits by feeding on it.
- Examples: tapeworms, fleas, and disease-causing protozoa, bacteria, and viruses, many of which have complex life cycles.
Mutualism

- In **mutualism**, both the host and the “other” species benefit.

  **Example**: lichens, which are entities formed by fungi and algae living together
  - The algae provide the food by photosynthesis and the fungi provide protection.

Keystone Species

- **Keystone species** play a major role in determining community structure & function.
- Role is out of proportion to its abundance
- Removal alters community.

Keystone Species

- Keystone species must be identified and protected so that human activities do not lead to the collapse of entire communities and ecosystems.